

The mechanism of action remains uncertain. Static electricity of hundreds of volts per inch has been demonstrated with both the silicone and silastic gel sheeting. With reports showing increased mast cells within keloids—and suggesting this as the cause of symptoms—and other reports showing both an effect of mast cells on collagen production and a decrease in mast cell numbers by electrical stimulation, this has been proposed as the mechanism of action. Other investigators have cited differences in permeability to water and hydration as the mechanism of action.

Biopsy specimens taken before and after successful therapy show little structural change of scar tissue. Of even more interest, there is no evidence of silicone in body tissue with any of the forms including the silicone creams. With the current concern over silicone implants, this can be of great importance. There is no need for pressure increase, and irritation can be easily controlled without sacrificing efficacy.

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Management of Capillary Hemangiomas

CAPILLARY OR STRAWBERRY HEMANGIOMAS are the most common benign vascular tumor of neonates. The incidence is estimated to be 1.0% to 2.6% of births and as high as 10% in the first year of life. If present at birth, the lesion appears as a faint red to violaceous macule surrounded by a white halo. A capillary hemangioma proceeds through distinctive phases: a proliferative phase during the first year, a stable period, and in the course of months to years, involution even in the absence of therapy. A useful rule of thumb is that 50% of lesions regress completely within five years, 70% within seven years, and the remainder continue to fade until age 10 to 12.

The management of capillary hemangiomas remains conservative because most of these lesions involute spontaneously. Frequently observing patients in the proliferative growth phase, measuring the size of the lesion, and obtaining serial photographs have become the standard of routine care. Parents require repeated reassurance as to the benign nature and evolution of these tumors.

Active therapy is reserved for the more aggressive lesions; the method of treatment must be chosen on an individual basis. A regimen of oral steroids at an initial dosage of 2 to 4 mg per kg per day is indicated in rapidly enlarging lesions that may seriously distort facial features, interfere with normal physiologic functions (vision, respiration, eating, or hearing), and are associated with ulceration and recurrent bleeding. High-dose oral prednisone therapy should be continued for four weeks, fol-

lowed by alternate-day therapy using the same or doubled dosage for another four to six weeks, with subsequent gradual tapering of the dosage as needed. Involution begins in the second or third week of treatment and continues into the second month. If rebound growth of the hemangioma occurs, a second or third course of oral corticosteroids may be necessary. Immature, proliferating hemangiomas are far more responsive to steroid treatment than stable or involuting lesions. Softening, lightening of color, and a diminished rate of growth are the indicators of responsiveness to treatment. Upper eyelid hemangiomas present a special problem because they may cause substantial visual disturbances such as strabismus, amblyopia, astigmatism, and anisometropia. If the visual axis is occluded, or vision is affected, intralesional corticosteroids, such as triamcinolone acetate and betamethasone sodium phosphate or acetate, are administered to the eyelid hemangiomas by ophthalmologists. Excellent response to such treatment has been reported in one series. Recently reported side effects of this intralesional treatment include pigmentary and atrophic changes of the epidermis, eyelid necrosis, retinal artery occlusion, adrenal suppression, and growth retardation. Other severe vision-threatening or life-threatening hemangiomas unresponsive to corticosteroids may also be treated subcutaneously with interferon alfa-2a in a dosage ranging from 1 million to 3 million units per m².

Lasers have a definite role in the treatment of capillary hemangiomas. The vascular-specific (585 nm), pulsed (450 microseconds), tunable dye laser has been effective in preventing enlargement and promoting involution when treatment is initiated early and the hemangioma is elevated 3 mm or less. This laser also promotes wound healing in ulcerated hemangiomas of the anogenital and intertriginous areas. Ulcerations of less than 20 mm heal within two weeks after a single treatment, and the pain associated with the ulceration diminishes within 24 hours. Vascular-specific pulsed-dye lasers function by selective photothermolysis of capillary-sized blood vessels. They are safe, effective, and their use is associated with a minimal risk of scarring.

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Ozone Depletion—Is the Sky Falling?

OZONE IS A NATURALLY OCCURRING molecule found in the stratosphere (15 to 50 km above the earth's surface). Ozone and oxygen absorb most of the ultraviolet radiation transmitted to the earth. Substantial ozone depletion could result in increased UV irradiation at the earth's surface, with many possible deleterious effects, including an increased incidence of skin cancers and cataracts.

Halocarbons have been impugned as the main cause of ozone depletion. These include both chlorofluorocarbons (CFCs) and halons. Both are short carbon chains, CFCs being saturated with predominantly chlorine and halons with bromine. Chlorofluorocarbons largely result from manufacturing processes, including those involving air-conditioning coolants, foam extrusion, and industrial solvents. Halons come from both natural sources, such as seawater, and industrial processes involving fire extinguishers.

When halocarbons reach the stratosphere, they act as a catalyst for the destruction of ozone. The chlorine and bromine are not consumed. Each chlorine molecule has a half-life of 75 years and may destroy about 100,000 molecules of ozone.

Although somewhat controversial, there is a fair consensus that the ozone layer is thinning. Satellite measurements report worldwide ozone depletion of at least 3% since 1978, with some estimates substantially higher. This depletion is unevenly distributed, being as much as 50% at the poles and about 7% in the temperate areas. No ozone depletion has been reported in the equatorial regions. There is an important seasonal variation, with ozone levels being lowest in the winter and highest during the summer.

Increased amounts of UV radiation, especially UVB, will reach the earth's surface as a result of ozone depletion. It is estimated that for every 1% decrease in ozone, there will be a 2% to 6% increase in the incidence of both basal cell and squamous cell carcinoma. More important, it is estimated that there will be about a 1% increase in the incidence of melanoma for each 1% depletion in ozone. As ultraviolet light is also implicated in causing cataracts, as many as 2.8 million additional cataracts could occur worldwide by 2075.

Despite the documented decreased ozone levels, no increases in ground-level UVB had been recorded in temperate regions until a recent report. For the first time, UVB levels in a temperate region have been shown to be increasing by 5% per year since 1988. There have also been recent intermittent reports of increased UVB at ground levels in the Antarctic. The cold temperature at the poles may predispose to the ozone depletion and the resultant increased UVB.

There are some reassuring factors. Smog, pollution, and particulate material in the atmosphere all help to absorb or disperse UVB. Indeed, some models even predict decreased UVB levels at ground level despite ozone depletion. Further, even if the amount of UVB doubled or tripled in northern and southern latitudes, these areas would receive less UVB than the equatorial regions currently receive. Seasonal ozone variation is also partially protective. Ozone is created by photochemical interactions, so as UV irradiation increases—that is, summertime—increasing amounts of ozone are produced.

Approaches to dealing with ozone depletion include phasing out all ozone-damaging halocarbons by the year 2000, following an international agreement signed in 1988 by 42 countries. This should decrease the amount of arti-

cial halocarbons in the atmosphere, although the effect of natural halocarbons such as from the eruption of Mount Pinatubo in the Philippines is unknown. Chlorofluorocarbon substitutes are being actively developed, although at the present time they appear to be more expensive and less efficient in industrial processes. The recycling of CFCs in compounds such as home and auto coolants is becoming mandatory in most states. Many new cars are using an air-conditioning system free of CFCs. Finally, risks posed by increased UVB at the earth's surface can be partially offset by protective measures such as sunscreens, eyewear, and appropriate clothing.

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Recent Developments in the Treatment of Human Papillomavirus

WARTS HAVE BEEN RECOGNIZED since Greek and Roman times. Despite recent advances in recombinant DNA technology, which have allowed the identification of more than 60 different genotypes of human papillomavirus (HPV), current treatment remains controversial and often disappointing.

With recent polymerase chain technology, HPV DNA can be identified in tissues without clinically apparent lesions (so-called subclinical lesions). Dormant HPV has been identified in tissues using this technology (latent lesions). Our failure to cure HPV infections, many think, results from our inability to resolve these lesions. Unfortunately, few studies demonstrate consistent resolution of subclinical and latent lesions by any treatment method.

Recently the malignant transformation potential of HPV has come to the forefront and several questions have been raised, not only about the malignant potential of clinical HPV lesions, but also about subclinical and latent lesions. Papillomavirus types 6, 11, 16, and 18 have been implicated as a possible cause of condylomata acuminata (genital warts). More important, HPV types 6 and 11 have been associated with low-grade dysplasia of the cervix, whereas types 16 and 18 are associated with high-grade dysplasia, carcinoma in situ, and invasive carcinomas of the cervix. Human papillomavirus types 6, 11, 16, and 30 have been detected in laryngeal squamous cell carcinomas. Some lesions of epidermodysplasia verruciformis (a rare, chronic skin disorder associated with HPV types 5, 8, 14, 17, and 20) are thought to undergo transformation to squamous cell carcinoma.

Concerns about HPV tumorigenicity and unacceptable recurrence rates with standard treatment methods (cryosurgery, carbon dioxide laser, electrosurgery, surgery, salicylic acid, trichloroacetic acid, podophyllin, fluorouracil [5-fluorouracil], and bleomycin sulfate) led to the search for other therapeutic options.

Interferons are cytokines—immunoregulatory proteins